See Numbers in Data

Online course learning objectives

This course prepares and provides students with the knowledge and skills to read, interpret, and produce tables and graphs - including tendency, spread and dispersion, and scientific notation. It teaches the fundamentals of numerical data and how to recognize different types of data to make assessments.

This course will help learners to:

- Use numerical data to describe research with detail and precision.
- Define average and central tendency and use these to analyze data and understand what they tell you about typical observations in data.
- Measure the spread of data to understand and assess variation in data.
- Recognize and make sense of bar charts, pie charts, histograms, box plots, line graphs, and scatterplots - and identify what questions to ask these graphs to interpret their data.
- Apply a seven-step framework to interpret numerical data with confidence and clarity.

Language: English
Time to complete: 5 hours
Instructor: John MacInnes
Level: Intermediate

Online course full syllabus

MODULE ONE: WHY IS MOST DATA NUMERICAL?

This module covers what we mean by 'data' and what is measures, while also exploring what numbers can help us achieve and understand.

Topics:

1. What do we mean by 'data'?
2. How do we describe data and what it measures?
3. What do numbers help us do?

MODULE TWO: WHAT IS THE AVERAGE, LEVEL OR CENTRAL TENDENCY OF DATA?

This module covers how to understand and use averages what working with data.

Topics:

1. What is the average?
2. Understanding and using averages
3. The impact of outliers

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MODULE THREE: WHAT IS THE SPREAD OR DISPERSION OF DATA?

This module covers the two corresponding measures of spread; standard deviation and interquartile range (IQR).

Topics:

1. Describing variation in data
2. Measure of spread one: standard deviation
3. Measure of spread two: interquartile range

MODULE FOUR: HOW DO I UNDERSTAND THE DATA IN PIE CHARTS, BAR CHARTS AND HISTOGRAMS?

Examine pie charts, bar charts and histograms - and teaches how to interpret the data they present.

Topics:

1. How do graphs work?
2. Pie charts
3. Bar charts
4. Histograms

MODULE FIVE: HOW DO I UNDERSTAND THE DATA IN BOX PLOTS, LINE GRAPHS AND SCATTERPLOTS?

Examine box plots, line graphs and scatterplots and how to interpret the data they present.

Topics:

1. How do graphs work?
2. Box plots
3. Line charts
4. Scatterplots

MODULE SIX: HOW DO I UNDERSTAND THE DATA IN A GRAPH?

This module teaches learners how to decode a graph using fundamental questions.

Topics:

1. How to decode any graph or chart
2. Decoding a graph: an example
3. Decode a graph yourself: answer the ten questions
4. Decode a graph yourself: answer the four questions

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MODULE SEVEN: HOW DO I USE AND INTERPRET NUMBERS IN DATA WELL?

This module covers seven rules to interpret and evaluate numbers.

Topics:

1. The seven simple rules for interpreting numbers successfully
2. Rule 1: always use a number if you can
3. Rule 2: never use a number if you don't know where it has been
4. Rule 3: embrace uncertainty
5. Rule 4: orders of magnitude matter
6. Rule 5: avoid making mountains out of molehills
7. Rule 6: (at least) two is company
8. Rule 7: three is plenty

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